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position and suitability for technical purposes, thus enabling him to reach practical conclusions. The origin, harvesting, preparation and utilization of material are also briefly considered whenever the methods of preparation have an influence on the structure of the raw material.

The English edition has been improved by the introduction of over forty new cuts. The drawings by Winton and Barber are a decided improvement over many in the original work which are occasionally so diagrammatic as to be almost misleading. Note should also be made of the very considerable additions to the chapter on textile fibers and of the discussion of commercial timbers which has been revised and extended so as to include the most important North American species.

Noteworthy features of the book are the citations of the literature dealing with the various topics treated and the attention that is given to the solution of purely practical problems. Mention should also be made of the discussions of the more important morphological and biological features of the various organs and structures studied so that the student begins his examination of the commercial products with an understanding of the nature and origin of the various cells and tissues with which he is dealing. While in some minor respects this treatment is not in accord with present day botanical teaching, it will be conceded that the presentation has been made with a clearness and conciseness of statement and with a simplicity and consistency of terminology that may well serve as models for future authors.

Considering the range of the work, the authors have been remarkably successful in handling the various topics and have furnished to technical microscopists a timely and valuable textbook.

CARLTON C. CURTIS.

PROCEEDINGS OF THE CLUB

FEBRUARY 26, 1908

The Club was called to order at the Museum of the New York Botanical Garden at 3:45 P. M. Ten persons were present.

After the reading and approval of the minutes of the preceding

meeting, resignations were read and accepted from Mr. W. H. Liebelsperger, Mr. J. Charles Roper, Mr. James Walker, Mr. George Wirsing, and Dr. H. E. Hasse. These resignations were accepted by the Club.

The scientific program consisted of two papers, of which the authors have submitted the following abstracts:

Remarks on the Genus Boletus. By Dr. William A. Murrill. This paper will be published in the March (1908) number of *TORREYA*.

Some Fern Hybrids. By Mr. Ralph C. Benedict.

The object of this paper was to present general facts regarding fern hybrids, to indicate the apparent significance of the facts, and to show examples of some native hybrids.

The literature on the subject seems to be very scanty, and consists principally of scattered descriptions of natural and horticultural hybrids. Lowe (*Fern Growing*) has given a general discussion of the subject but his work is of a horticultural, rather than of a scientific, value. The most conclusive experiments are those carried on by Miss Margaret Slosson, in which she reproduced culturally *Asplenium ebenoides* (*A. platyneuron* × *Camptosorus rhizophyllus*), and *Dryopteris cristata* × *marginalis* Davenport, two suspected hybrids, which occur in nature. Recently at least one more cross has been artificially produced by Mr. Amedee Hans, of Stamford, Ct., between *Dryopteris Filix-mas* and *D. marginalis*. This, however, has not yet been found wild.

Study of these three authenticated hybrids shows that they agree in general with the hybrids of some flowering plants. They are sterile, usually larger than the parents, sometimes abnormal, and in many characters intermediate to a greater or less degree between the parent species. In view of these facts, it seems reasonable to interpret as hybrids other forms (principally in *Dryopteris*) which are sterile and similarly intermediate between two species.

Some of these are very characteristic and might be considered separate species. At least two have been so described. This view, however, is untenable because of their sterility, and their distribution, rare or occasional with the parent species, or at least

in a locality where these grow or have grown. That they are mutations seems very doubtful, because the actual differences are so great, and especially since in these differences they resemble the other reputed parent. For example, sterile intermediates are known between *Dryopteris marginalis* and six other species. Some resemble *marginalis* most, some the other species, but all agree in possessing distinctive characters of each of two species. For similar reasons, these forms cannot be satisfactorily explained on ecological grounds.

If it is objected that fern hybrids must, because of the conditions required for the transference of spermatozoids, be too rare to account for these plants, which are rather common, it may be said that *Dryopteris cristata* \times *marginalis*, one of the authenticated crosses, is perhaps the commonest of them all. It may be expected in any swampy woodland where the parent species occur. This being the case, we are bound to expect the other forms to be found at least occasionally, and it seems only logical to conclude that such intermediate sterile forms as are analogous in general characters to *D. cristata* \times *marginalis* belong in the same category and are likewise hybrids.

In the region in which the writer has studied these plants, *Dryopteris* is represented by six specific units which seem to hybridize more or less readily, representing a total of fifteen possible combinations of two species. Of these fifteen, two are already described. Of the remaining, probably eleven have been found, and descriptions for most of these are in preparation, some by Miss Slosson, some by Dr. Philip Dowell, and some by the writer.

Both papers were discussed at length, and the Club adjourned at 5:45 o'clock.

C. STUART GAGER,
Secretary.

MARCH 10, 1908

The meeting was called to order at the American Museum of Natural History at 8:30 P. M. by the Chairman of the program committee. There were twenty-five persons present. In the absence of all officers of the Club, no business was transacted. The scientific program consisted of an illustrated lecture entitled

"On horseback through Hayti," by Mr. George V. Nash,* and was listened to with great interest by all present.

Adjournment was at 9:45.

TRACY E. HAZEN,
Secretary pro tem.

OF INTEREST TO TEACHERS

The sixth question suggested in the March number has enlisted many interesting letters. This issue contains but part of them; other letters referring to this and to the remaining questions will be printed later in *TORREYA*. The wide range in the letters is in itself suggestive.

The question here discussed is :

Why does not the study of botany more often create a lasting interest? Would this be secured by more emphasis on morphology, including classification?

Perhaps one reason more lasting interest is not secured is because there is so little that even the interested high school pupil can do by himself after completing his half year or whole year course in botany. Reading alone will not serve as in history, literature and foreign languages. The second part of the question was added with this difficulty in mind.

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The following is a qualified answer for I do not feel that I can answer the question for more than the students under my own observation.

For boys of the age when they come to the De Witt Clinton High School (13 to 15), I believe the more laboratory physiology or perhaps I should say the more simple experimental work and demonstration we give in elementary, physical, chemical, and biological science, the greater the interest. Things morphologic or taxonomic seem to gain and hold interest with but few; modifications and adaptations in structure interest more students; simple experiments with a definite problem put before the student

* Instead of the usual abstract Mr. Nash has written a short article on the mangrove which appears upon another page; other interesting accounts of the same trip are to be published later in *TORREYA*.